APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/776,080	02/01/2001	Wei-Lien Hsu	5500-60900	9437

7590 12/18/2003	EXAMINER
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ART UNIT	PAPER NUMBER
2124	

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DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.		Applicant(s)
Office Action Summary	09/776,080		HSU ET AL.
	Examiner		Art Unit
	Chat C. Do		2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 November 2003*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,11,12 and 16-19* is/are rejected.

7)☒ Claim(s) *8-10, 13-15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

    a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *4* .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1.   This communication is responsive to Amendment A, filed 11/03/2003.

2.   Claims 1-19 are pending in this application. Claims 1, 11, and 16-19 are independent

claims. In Amendment A, claims 1-3, 7, 11-12, and 16-17 are amended and claims 18-19 are

added. This action is made non-final.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1, 4-5, and 16-17 are rejected under 35 U.S.C. 102(e) as being anticipated by

Horton (U.S. 6,421,696).

Re claim 1, Horton discloses in Figure 3 and 8 a method of performing a two

dimensional discrete cosine transform "DCT" using a microprocessor having an

instruction set that includes SIMD floating point instructions (abstract and col. 3 lines 24-

30), wherein the method comprises: receiving a block of integer data having C columns

and R rows (col. 1 lines 57-58 and col. 1 lines 36-42 wherein the frame is a two

dimensional data), wherein each of the R rows contains C row data values, wherein the

block of integer data is indicative of a portion of an image (col. 1 lines 36-42); and for

each row, loading the C row data values of the row into registers (Figure 6 and col. 2

lines 44-50); converting the C row data values into floating point form (col. 4 lines 60-

65), wherein the registers each hold two floating point row data values ({Re(0): Re(1)},

{Re(2):Re(3)},... in Figure 6); and performing a plurality of weighted-rotation operations

on the values in the registers (Figure 10), wherein the weighted-rotation operations are

performed using SIMD floating point instructions (col. 5 lines 1-6 and lines 28-34).

Re claim 4, Horton further discloses in Figure 10 for each row, altering the

arrangement of values in the registers; performing a second plurality of weighted-rotation

operations on the values in the registers; again altering the arrangement of the values in

the registers; performing a third plurality of weighted-rotation operations on the values in

the registers; yet again altering the arrangement of the values in the registers; and

performing a fourth plurality of weighted-rotation operations on the values in the

registers to obtain intermediate floating point values (depending on the number of input

data, more stages are repeated as seen in Figure 10 and Figure 1).

Re claim 5, Horton further discloses in Figure 3 and 8 for each row, storing the

intermediate floating point values to an intermediate buffer (Figure 6 and col. 6 lines 33-

35).

Re claim 16, it is a system claim of claim 1. Thus, claim 16 is also rejected under

the same rationale in the rejection of rejected claim 1.

Re claim 17, it is a carrier medium claim of claim 1. Thus, claim 17 is also

rejected under the same rationale in the rejection of rejected claim 1.

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in·
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

6.   Claims 6, 11, and 18-19 are rejected under 35 U.S.C. 103(a) as being obvious over

Horton (U.S. 6,421,696) in view of Hung et al. ("Statistical Inverse Discrete Cosine Transforms

for Image Compression").

Re claim 6, Horton does not disclose a second dimensional DCT comprising for

two columns at a time, loading data from two columns of intermediate data into each of a

plurality of registers; performing a plurality of weighted-rotation operations for two

columns are performed in parallel using SIMD floating point instructions. However,

Hung et al. disclose in Figure 2 a second dimensional DCT (column operations)

comprising for two columns at a time (e.g. even and odd), loading data from two columns

of intermediate data into each of a plurality of registers; performing a plurality of

weighted-rotation operations for two columns are performed in parallel using SIMD

floating point instructions (Figure 4). Therefore, it would have been obvious to a person

having ordinary skill in the art at the time the invention is made to add a second

dimensional DCT comprising loading two columns at a time and performing a plurality

of weighted-rotation operations for those two columns as seen in Hung et al.'s invention

into Horton's invention because it would enable to increase the system performance in

the second dimension DCT by processing multiple columns at same time.

Re claim 11, it has the same limitations cited in claim 6. Thus, claim 11 is also

rejected under the same rationale in the rejection of rejected base claim 6.

Re claim 18, it is a system claim of claim 11. Thus, claim 18 is also rejected

under the same rationale in the rejection of rejected claim 11.

Re claim 19, it is a carrier medium claim of claim 11. Thus, claim 19 is also

rejected under the same rationale in the rejection of rejected claim 11.

7.   Claims 2-3, 7, and 12 are rejected under 35 U.S.C. 103(a) as being obvious over Horton

(U.S. 6,421,696), as applied to claim 1 above, in view of Advanced Micro Devices Inc. ("AMD

Extensions to the 3Dnow!^{TM} and MMX ^{TM} Instructions Sets Manual").

Re claim 2, Horton discloses in Figure 10 a DCT operation in floating point

format. Horton does not disclose a converting is accomplished using the pi2fw

instruction. However, Advanced Micro Devices Inc. discloses in page 2 Table 1 the

functionality of pi2fw instruction in multimedia operations. Therefore, it would have

been obvious to a person having ordinary skill in the art at the time the invention is made

to add the pi2fw instruction in the Advanced Micro Devices Inc.'s manual into Horton's

invention for converting packed integer to floating point words because it would enable

to simplify the system software and improve the system performance.

Re claim 3, Horton discloses in Figure 10 weighted-rotation operations are

accomplished using the swap operation, multiply operation (with weight), and

accumulate operation in floating point format. Horton does not disclose weighted-

rotation operations are accomplished using the pswap, pfmul, and pfpnacc instructions.

However, Advanced Micro Devices Inc. discloses in page 2 Table 1 the the pswap, pfmul, and pfpnacc instructions for used in the swap operation, multiply operation (with weight), and accumulate operation in floating point format. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention is made to add the pswap, pfmul, pfpnacc instructions as seen in the Advanced Micro Devices Inc's manual into Horton's invention for performing the DCT operations because it would enable to simplify the system software and improve the system performance.

Re claim 7, it has the same limitations cited in claim 3. Thus, claim 7 is also rejected under the same rationale in the rejection of rejected base claim 3.

Re claim 12, it has the same limitations cited in claim 3. Thus, claim 12 is also rejected under the same rationale in the rejection of rejected base claim 3.

Allowable Subject Matter

8.   Claims 8-10 and 13-15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9.   Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicant's arguments, the recitation "two-dimensional discrete cosine transform (DCT)" in claim 1 has not been given patentable weight because the

recitation occurs in the preamble. A preamble is generally not accorded any patentable

weight where it merely recites the purpose of a process or the intended use of a structure,

and where the body of the claim does not depend on the preamble for completeness but,

instead, the process steps or structural limitations are able to stand alone. See *In re*

Hirao, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152,

88 USPQ 478, 481 (CCPA 1951).

Conclusion

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Chat C. Do whose telephone number is (703) 305-5655. The

examiner can normally be reached on M => F from 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Chaki Kakali can be reached on (703) 305-9662. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding

should be directed to the receptionist whose telephone number is (703) 305-3900.

Chat C. Do
Examiner
Art Unit 2124

December 1, 2003

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